MATHEMATICS CROSSWALK
2008 MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 7

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL				
Strand 1: Number and Operations				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Number Sense	1	Recognize and convert between expressions for positive and negative rational numbers, including fractions, decimals, percents, and ratios.	M06-S1C1-04	Determine the equivalency between and among fractions, decimals, and percents in contextual situations.
	2	Find or use factors, multiples, or prime factorization within a set of numbers.	2	Identify the greatest common factor for a set of whole numbers.
			3	Determine the least common multiple for a set of whole numbers.
	3	Compare and order rational numbers using various models and representations.	6	Locate integers on a number line.
			7	Order integers.
	4	Model and solve simple problems involving absolute value.	5	Recognize the absolute value of a number used in contextual situations.
			M07-S1C2-08	Apply the symbols + and – to represent positive and negative, and "│ │" to represent absolute value.
	M04-S1C1-01	**Moved to Grade 4**	1	Express fractions as terminating or repeating decimals.
	M05-S1C1-06	**Moved to Grade 5**	4	Choose the appropriate signed real number to represent a contextual situation.
	M08-S1C1-03	**Moved to Grade 8**	8	Classify rational numbers as natural, whole, or integers.
2. Numerical Operations	1	Add, subtract, multiply, and divide integers.	1	Add integers.
			2	Subtract integers.
			3	Select the grade-level appropriate operation to solve word problems.
			5	Multiply integers.
			6	Divide integers.
	2	Solve problems with rational numbers and appropriate operations using exact answers or estimates.	3	Select the grade-level appropriate operation to solve word problems.
			4	Solve word problems using grade-level appropriate operations and numbers.

* This performance objective is new to the 2008 Mathematics Standard Articulated by Grade Level.

Strand 1: Number and Operations				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
2. Numerical Operations	3	Solve problems involving percentages, ratio and proportion, including tax, discount, tips, and part/whole relationships.	10	Calculate the percent of a given number.
	4	Represent and interpret numbers using scientific notation (positive exponents only).	11	Convert numbers expressed in standard notation to scientific notation and vice versa (positive exponents only).
	5	Simplify numerical expressions using the order of operations and appropriate mathematical properties.	7	Apply grade-level appropriate properties to assist in computation.
			12	Simplify numerical expressions using the order of operations with grade- appropriate operations on number sets.
		REMOVED (This skill is required throughout the standard.)	9	Use grade-level appropriate mathematical terminology.
3. Estimation	1	Estimate and apply benchmarks for rational numbers and common irrational numbers.	5	Determine whether an estimation of the circumference of a circle is approximately equal to the actual measure.
	2	Make estimates appropriate to a given situation.	1	Solve grade-level appropriate problems using estimation.
			2	Use estimation to verify the reasonableness of a calculation (e.g., Is –2.5 x 18 about –50?).
			3	Determine whether an estimation of an area is approximately equal to the actual measure.
			4	Determine whether an estimation of an angle is approximately equal to the actual measure.
			6	Verify the reasonableness of estimates made from calculator results within a contextual situation.
	3	*Estimate square roots of numbers less than 1000 by locating them between two consecutive whole numbers.*		
	4	Estimate the measure of an object in one system of units given the measure of that object in another system and the approximate conversion factor.	M05-S1C3-05	Compare estimated measurements between U.S. customary and metric systems (e.g., A yard is about a meter.).

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CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
Strand 2: Data Analysis, Probability, and Discrete Mathematics				
1. Data Analysis (Statistics)	1	Solve problems by selecting, constructing, and interpreting displays of data including multi-line graphs and scatterplots.	2	Construct a circle graph with appropriate labels and title from organized data.
			3	Determine when it is appropriate to use histograms, line graphs, double bar graphs, and stem-and-leaf plots.
			4	Interpret data displays including histograms, stem-and-leaf plots, circle graphs, and double line graphs.
			5	Answer questions based on data displays including histograms, stem-and-leaf plots, circle graphs, and double line graphs.
			9	Solve contextual problems using histograms, line graphs of continuous data, double bar graphs, and stem-and-leaf plots.
	2	Interpret trends in a data set, estimate values for missing data, and predict values for points beyond the range of the data set.	7	Interpret trends from displayed data.
	3	Identify outliers and determine their effect on mean, median, mode, and range.	6	Find the mean, median, mode, and range of a given numerical data set.
	4	Distinguish between a simple random and non-random sample.		
		REMOVED	1	Formulate questions to collect data in contextual situations.
		REMOVED	8	Compare trends in data related to the same investigation.
2. Probability	1	Determine conditional probabilities (experimental) in compound probability experiments.	4	Record the data from performing a grade-level appropriate probability experiment.
	2	*Experiment with two different events to determine whether the two events are dependent or independent of each other.*		

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Strand 2: Data Analysis, Probability, and Discrete Mathematics					
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**	
2. Probability	3	Compare the results of multiple repetitions of the same probability experiment to the theoretical probability.	1	Determine the probability that a specific event will occur in a single stage probability experiment (e.g., Find the probability of drawing a red marble from a bag with 3 red, 5 blue, and 9 black marbles.).	
			3	Predict the outcome of a grade-level appropriate probability experiment.	
			5	Compare the outcome of an experiment to predictions made prior to performing the experiment.	
			7	Compare the results of two repetitions of the same grade-level appropriate probability experiment.	
	4	Compare probabilities to determine fairness in experimental situations.	2	Compare probabilities to determine the fairness of a contextual situation (e.g. If John wins when two or greater shows after a six-sided number cube is rolled and Joaquin wins otherwise, is this a fair game?).	
	M07-S5C2-08	**Moved to Strand 5 Concept 2**	6	Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes, cards).	
3. Systematic Listing and Counting	1	Analyze relationships among the tree diagrams where items repeat and do not repeat; make numerical connections to the multiplication principle of counting.	1	Determine all possible outcomes involving the combination of up to three sets of objects (e.g., How many outfits can be made with 3 pants, 2 tee shirts and 2 pairs of shoes?).	

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Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
3. Systematic Listing and Counting	2	Solve counting problems using Venn diagrams and represent the answer algebraically.	1	Determine all possible outcomes involving the combination of up to three sets of objects (e.g., How many outfits can be made with 3 pants, 2 tee shirts and 2 pairs of shoes?).
			2	Determine all possible arrangements of a given set, using a systematic list, table, tree diagram, or other representation.
			M04-S2C1-02	Construct a single-bar graph, line graph or **two-set Venn diagram** with appropriate labels and title from organized data.
			M04-S2C1-03	Interpret graphical representations and data displays including single-bar graphs, circle graphs, **two-set Venn diagrams**, and line graphs that display continuous data.
			M04-S2C1-04	Answer questions based on graphical representations and data displays including single-bar graphs, circle graphs, **two-set Venn diagrams**, and line graphs that display continuous data.
4. Vertex-Edge Graphs	1	*Use vertex-edge graphs and algorithmic thinking to represent and find solutions to practical problems related to Euler/Hamilton paths and circuits.*		
	M06-S2C4-01	**Moved to Grade 6**	1	Find the shortest circuit on a map that makes a tour of specified sites (vertex-edge graph).

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Strand 3: Patterns, Algebra, and Functions				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Patterns	1	Recognize, describe, create, and analyze numerical and geometric sequences using tables or graphs; make conjectures about these sequences.	1	Communicate a grade-level appropriate recursive pattern, using symbols or numbers.
			2	Extend a grade-level appropriate recursive pattern.
			3	Solve grade-level appropriate recursive pattern problems.
2. Functions and Relationships	1	Use a table of values to graph an equation or proportional relationship; describe the graph's characteristics.	M07-S4C3-01	Graph data points in (x, y) form in any quadrant of a coordinate grid.
	M08-S3C2-03	**Moved to Grade 8**	1	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model).
3. Algebraic Representations	1	Write a single variable algebraic expression or one-step equation given a contextual situation.	2	Use variables in contextual situations.
			3	Translate a written sentence into a one-step, one-variable algebraic equation.
			4	Translate a sentence written in context into an algebraic equation involving one operation.
	2	Evaluate an expression containing one or two variables by substituting numbers for the variables.	1	Evaluate an expression containing two variables by substituting integers for the variable (e.g., $7x + m$, when $x = -4$ and $m = 12$).
	3	Solve multi-step equations using inverse properties with rational numbers.	5	Solve one-step equations using inverse operations with positive rational numbers (e.g., $\frac{2}{3}n = 6$).
	4	*Translate between graphs and tables that represent a linear equation.*		
	5	*Create and solve two-step equations that can be solved using inverse operations with rational numbers.*		
	6	*Create and solve one-step inequalities with whole numbers.*		
4. Analysis of Change	1	Use graphs and tables to model and analyze change.	1	Analyze change in various linear contextual situations.

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Strand 4: Geometry and Measurement				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Geometric Properties	1	Recognize the relationship between central angles and intercepted arcs; identify arcs and chords of a circle.	7	Recognize the relationship between central angles and intercepted arcs.
			8	Identify arcs and chords of a circle.
	2	Analyze and determine relationships between angles created by parallel lines cut by a transversal.	6	Identify the angles created by two lines and a transversal.
			M08-S4C1-06	Identify the properties of angles created by a transversal intersecting two parallel lines (e.g., corresponding angles are congruent).
	3	Draw and classify 3-dimensional figures with appropriate labels showing specified attributes of parallelism, congruence, perpendicularity, and symmetry.	1	Draw a geometric figure showing specified properties (e.g., Draw an obtuse triangle.).
			2	Classify 3-dimensional solids by their configuration and properties (e.g., parallelism, perpendicularity and congruency).
			M06-S4C1-03	Classify prisms, pyramids, cones, and cylinders by base shape and lateral surface shape.
			M06-S4C1-04	Classify 3-dimensional figures by their attributes.
			M08-S4C1-01	Draw a model that demonstrates basic geometric relationships such as parallelism, perpendicularity, similarity/proportionality, and congruence.
			M08-S4C1-02	Draw 3-dimensional figures by applying properties of each (e.g., parallelism, perpendicularity, congruency).
	4	Describe the relationship between the number of sides in a regular polygon and the sum of its interior angles.	MHS-S4C4-08	Find the sum of the **interior** and exterior angles of a polygon.
	5	Identify corresponding parts of congruent figures.	10	Identify corresponding parts of congruent polygons as congruent.
	M04-S4C1-07	**Moved to Grade 4**	3	Identify the net (2-dimensional representation) that corresponds to a rectangular prism, cone, or cylinder.
		REMOVED	4	Distinguish between length, area, and volume, using 2- and 3-dimensional geometric figures.

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\multicolumn{5}{c}{**Strand 4: Geometry and Measurement**}				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Geometric Properties	M05-S4C1-01	**Moved to Grade 5**	5	Draw polygons with appropriate labels.
	MHS-S4C1-09	**Moved to High School**	9	Model the triangle inequality theorem using manipulatives.
2. Transformation of Shapes	1	Model the result of a double transformation (translations or reflections) of a 2-dimensional figure on a coordinate plane using all four quadrants.	1	Identify rotations about a point, using pictorial models.
			2	Recognize simple single rotations, translations or reflections on a coordinate grid.
3. Coordinate Geometry		**No performance objectives at this grade level.**		
	M06-S4C3-01	**Moved to Grade 6**	1	Graph data points in (x, y) form in any quadrant of a coordinate grid.
	M06-S4C3-02	**Moved to Grade 6**	2	State the missing coordinate of a given figure in any quadrant of a coordinate grid using geometric properties (e.g., Find the coordinates of the missing vertex of a rectangle when two adjacent sides are drawn.).
4. Measurement	1	Solve problems involving the circumference and area of a circle by calculating and estimating.	4	Solve problems involving the circumference of a circle.
			5	Solve problems involving the area of a circle.
			6	Solve problems for the areas of parallelograms, triangles, and circles.
			M07-S1C3-05	Determine whether an estimation of the circumference of a circle is approximately equal to the actual measure.

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Strand 4: Geometry and Measurement				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
4. Measurement	2	Identify polygons having the same perimeter or area.	6	Solve problems for the areas of parallelograms, triangles, and circles.
			7	Identify polygons having the same perimeter or area.
			M06-S4C4-10	Identify parallelograms having the same perimeter or area.
	3	Calculate the area and perimeter of composite 2-dimensional figures.	MHS-S4C4-01	Calculate the area of geometric shapes composed of two or more geometric figures.
	4	Determine actual lengths based on scale drawings or maps.	8	Compare estimated to actual lengths based on scale drawings or maps.
			M06-S4C4-11	Determine the actual measure of objects using a scale drawing or map.
	5	Create a net to calculate the surface area of a given solid.	M08-S4C1-04	Represent the surface area of rectangular prisms and cylinders as the area of their nets.
	6	Identify the appropriate unit of measure to compute the volume of an object and justify reasoning.	1	Identify the appropriate unit of measure for the volume of an object (e.g., cubic inches or cubic cm).
	7	Measure to the appropriate degree of accuracy and justify reasoning.	2	Measure to the appropriate degree of accuracy.
			M06-S4C4-03	Determine a linear measurement to the appropriate degree of accuracy.
		REMOVED	3	Convert a measurement from U.S. customary to metric, and vice versa.

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CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
Strand 5: Structure and Logic				
1. Algorithms and Algorithmic Thinking	1	*Create an algorithm to determine the area of a given composite figure.*		
	M07-S5C2-03	**Moved to Strand 5 Concept 2**	1	Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.
	M06-S5C1-01	**Moved to Grade 6**	2	Analyze algorithms for computing with fractions.
2. Logic, Reasoning, Problem Solving, and Proof	1	*Analyze a problem situation to determine the question(s) to be answered.*		
	2	*Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.*		
	3	Identify relevant, missing, and extraneous information related to the solution to a problem.	M07-S5C1-01	Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.
	4	*Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.*		
	5	*Apply a previously used problem-solving strategy in a new context.*		
	6	*Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.*		

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Strand 5: Structure and Logic				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
2. Logic, Reasoning, Problem Solving, and Proof	7	*Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.*	M04-S5C2-01	Draw a conclusion from a Venn diagram.
	8	Make and test conjectures based on information collected from explorations and experiments.	M07-S2C2-06	Make predictions from the results of student generated experiments using objects (e.g., coins, spinners, number cubes, cards).
	9	Solve logic problems using multiple variables and multiple conditional statements using words, pictures, and charts.	1	Solve a logic problem using multiple variables.
	10	*Demonstrate and explain that the process of solving equations is a deductive proof.*		
	11	*Use manipulatives and other modeling techniques to defend π (pi) as a ratio of circumference to diameter.*		

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